

1 7. The apparatus of claim 6, wherein said at least one module
2 comprises a local processor bus for communicating data between said processing
3 device and said bus interface device.

1 8. The apparatus of claim 1, comprising:
2 a sensor interface connected to said system bus.

1 9. The apparatus of claim 8, wherein said sensor interface
2 comprises a processor for processing sensor data.

1 10. The apparatus of claim 9, wherein said sensor interface
2 comprises a bus interface device for communicating data between said processor
3 and said system bus.

1 11. The apparatus of claim 10, wherein said sensor interface
2 comprises a local processor bus for communicating data between said processor
3 and said bus interface device.

1 12. The apparatus of claim 8, wherein said sensor interface
2 comprises a video sensor interface.

1 13. The apparatus of claim 8, wherein said sensor interface
2 comprises a forward looking infrared (FLIR) sensor interface.

1 14. The apparatus of claim 1, comprising a system controller for
2 controlling access to the system bus.

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1 19. The method of claim 18, wherein said step of arbitrating
2 comprises the steps of:
3 establishing a clear path to a device by checking device busy signals to
4 ensure that a destination device is not busy;
5 requesting a bus grant to transmit data packets to said device;

24. The method of step 23, wherein the system bus arbitration unit grants access to a second device upon request during a transmission of a data packet by another device on the system bus.

1 25. The method of claim 24, wherein access to the system bus is
2 granted to a second device by the system bus arbitration unit, which executes
3 the steps of:
4 discontinuing bus grant access to any device currently transmitting data;
5 verifying that the system bus is not busy;
6 verifying that a destination device is not busy;
7 granting access to the system bus for the second device requesting
8 access;
9 delaying any further transmission by said device whose access to the
10 system bus was discontinued by said step of discontinuing until after at least one
11 data packet has been transmitted by said second device.

1 26. The method of claim 25, wherein access to the system bus
2 between multiple devices connected to the system bus is granted according to
3 priority.

1 27. The method of claim 26, wherein access to the system bus
2 between multiple devices connected to the system bus is granted in a rotating
3 fashion based on said priority and for a maximum of the time required to
4 transfer one data packet.

1 28. The method of claim 17, wherein devices connected to the system
2 bus contain local and module busses connected to the system bus by way of a
3 gateway device, which arbitrates access to nodes connected to said module bus.

1 29. The method of claim 28, wherein said gateway device arbitrates
2 access to the local and module busses according to priority.

1 31. The method of claim 28, wherein arbitration of access to the
2 module bus is accomplished by the following steps:
3 inquiring if the module bus is in use;
4 verifying that a destination processor is not busy once the module bus is
5 not in use;
6 requesting access to the module bus to a bus gateway device;
7 gaining access to the module bus from said bus gateway device; and
8 transmitting data packets to said destination device.